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Land Degradation Neutrality
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Deutsches Institut für Entwicklungspolitik

German Development Institute

BRIEFING NOTE

LAND DEGRADATION, POVERTY AND INEQUALITY

Land Degradation, Poverty and Inequality

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BRIEFING NOTE

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SUMMARY

This briefing note explores the linkages between land degradation, poverty and inequality, making the case that investing in Land Degradation Neutrality (Sustainable Development Goal (SDG) Target 15.3) matters not only for the conservation of terrestrial ecosystems, but also for some of the most pressing country priorities, such as ending poverty (SDG 1) and reducing inequality (SDG 10).

Land degradation can cause or exacerbate poverty and inequality by disproportionally impacting on populations that largely depend on land resources for their livelihoods. Evidence gathered from over 800 subnational regions shows that areas with the highest proportion of degraded land are also home to the most disadvantaged people in terms of poverty and inequality, which reinforces the call for measures that will alleviate their current situation.

INTRODUCTION

Land degradation threatens the livelihoods of billions of people around the world [1]. This is particularly the case for populations living in rural areas where most of the poor people reside: estimates report that 80% of the extreme poor live in rural areas and 65% work in the agricultural sector [2]. Land represents a key asset for the livelihoods of the rural poor, as it provides key resources such as food, energy, shelter, and fodder, among others [3]. Land degradation, however, constrains the supply of these ecosystem services and negatively impacts household income and consumption in many parts of the world, worsening poverty and widening inequalities [1].

Despite the importance of land for human well-being, land degradation continues to increase worldwide due to several factors, including the expansion of crop and grazing lands into native vegetation, unsustainable agricultural and forestry practices, climate change, urban expansion, infrastructure development, and extractive industry [1]. According to the recently published World Atlas of Desertification, approximately 20% of the Earth's vegetated land surface showed persistent declining trends in land productivity between the years 1999 and 2013 [4]. In addition, the Trends.Earth tool reports a global degradation of 15% between the years 2001 and 2015 [5].

The internationally-agreed 2030 Agenda for Sustainable Development is an opportunity for countries to curb the growing threat of land degradation and to reap the multiple benefits of Land Degradation Neutrality[i] (LDN) (see Box 1). LDN (SDG Target 15.3) not only matters for recovering the productive capacity of land, but also serves as a means to tackle some of the most pressing societal challenges, including poverty and inequality. Ambitious targets are set for these socio-economic dimensions: targets under Goal 1 aspire to eradicate extreme poverty for all people everywhere (Target 1.1) and to reduce the proportion of people living in poverty by at least half by 2030 (Target 1.2). SDG 10 on reduced inequality aims, among others, to progressively achieve and sustain income growth of the bottom 40% of the population at a rate higher than the national average.

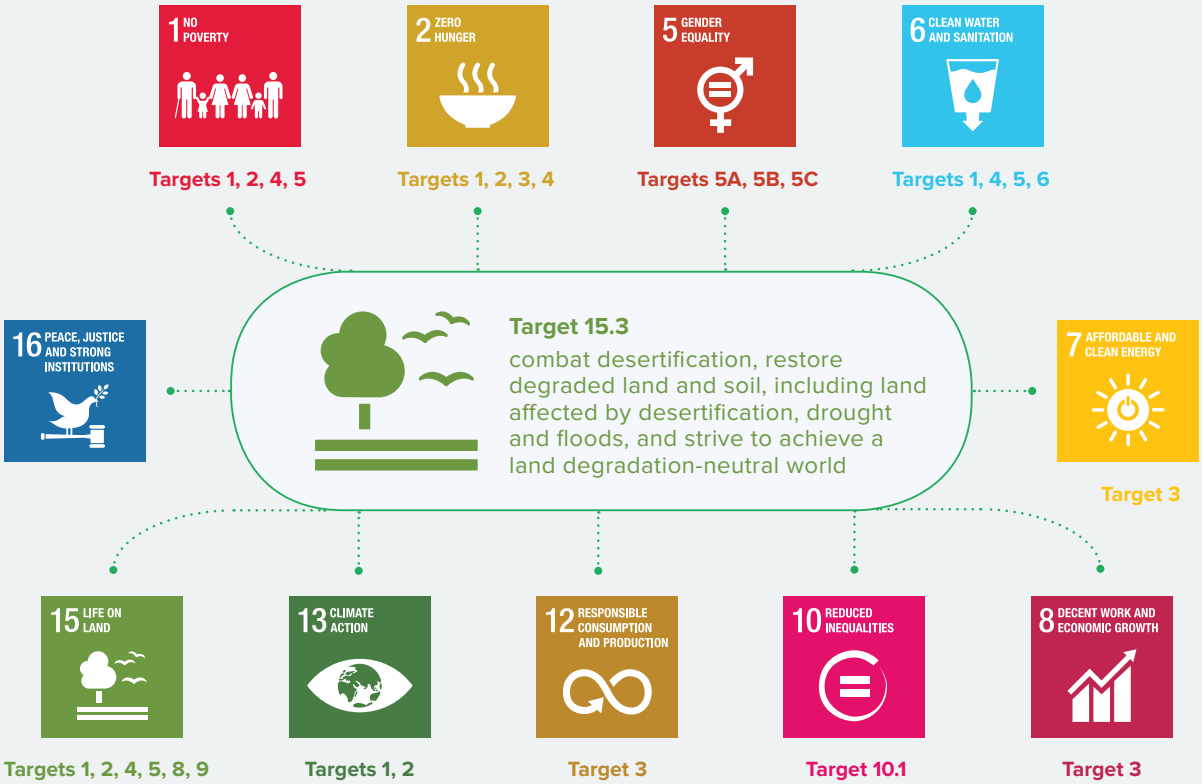
This briefing note examines the interlinkages between land degradation, poverty and inequality, making the case that investing in LDN contributes to the eradication of poverty and the reduction of inequality. While the following section presents the most common mechanisms through which land degradation can lead to increased poverty and inequality, section three showcases trends in the distribution of populations on degraded land worldwide. The last section of the briefing note provides recommendations.

Box 1: Sustainable Development Goal Target 15.3 on Land Degradation Neutrality

SDG 15, "Life on Land", and its Target 15.3 on LDN encourages countries to "combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world" by 2030. UNCCD country Parties decided to pursue LDN during the twelfth session of the Conference of the Parties in October 2015 (COP 12), acknowledging LDN as a strong vehicle for driving the implementation of the Convention. As of July 2019, more than 120 countries have committed to set national voluntary LDN targets, with the process being supported by the secretariat and the Global Mechanism of the UNCCD, in collaboration with 18 international partners, through the LDN Target Setting Programme.

Accomplishing LDN can play an important role in accelerating the achievement of other SDGs (see Figure 1). Avoiding and reducing the negative impacts on land, as well as restoring land resources, are crucial to tackle climate change, conserve and protect biodiversity and maintain vital ecosystem services, while also ensuring shared prosperity and well-being. Healthy and productive land can play an unparalleled role as an engine of economic growth and a source of livelihoods for billions worldwide, including the most vulnerable populations [6].

Figure 1 SDG Target 15.3 as an accelerator to achieve other SDGs [6]



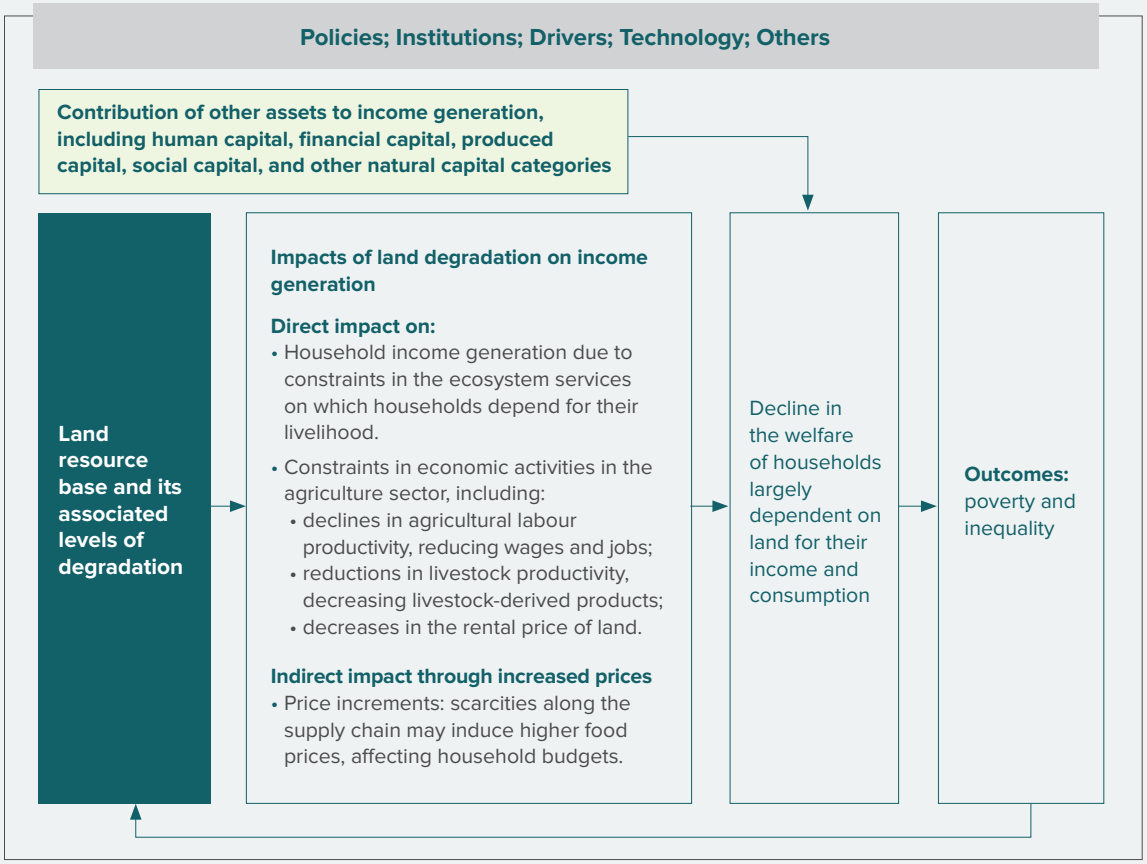
Adapted from UNCCD, 2019

LINKAGES BETWEEN LAND DEGRADATION, POVERTY AND INEQUALITY

Land degradation, poverty and inequality pose great challenges to the development of countries. These dimensions are intrinsically interconnected through multiple mechanisms that influence each other [1,7]. This briefing note focuses on how degrading and improving land can affect both poverty and inequality.[ii]

Land degradation generally constrains the supply of ecosystem services for human wellbeing, resulting in decreases in food, energy provision, groundwater recharge, soil fertility, carbon sequestration capacity, biodiversity and construction materials, among others [1,8]. Physical declines in ecosystem services have a direct impact on the capacity of households to generate income due to reductions in labour, livestock and land productivity, as well as on the capacity of households to harvest products from nature for their own livelihoods. On the other hand, the constraints on productive activities in the agriculture sector (which includes crop, livestock and forestry) due to land degradation also indirectly affect household relative incomes through increases in food prices. This indirect effect can impact not only the relative incomes of rural households, but also that of households located in urban areas. These direct and indirect negative impacts on individual households due to land degradation ultimately affect social welfare, increasing poverty and widening income inequalities across society (see Figure 2).

Figure 2 **Simplified scheme of the mechanisms through which land degradation can lead to poverty and inequality**



Source: authors' own.
Note: The land degradation-poverty-inequality nexus is shaped by several factors, including policies, institutions, technology, climate change and economic forces, among others.

Evidence linking land degradation and poverty

Land degradation can affect the capacity of the rural poor to generate income, as people at the bottom of the income distribution in rural areas are mainly engaged in land-related activities for their livelihoods [2,9–11]. A global profile of the poor reveals that 80% of the extreme poor and 75% of the moderate poor[iii] live in rural areas (see Figure 3a) and about 76% of the rural extreme poor and 61% of the rural moderate poor are employed in the agricultural sector [2], indicating that these groups are dependent on the agricultural sector for employment (see Figure 3b).

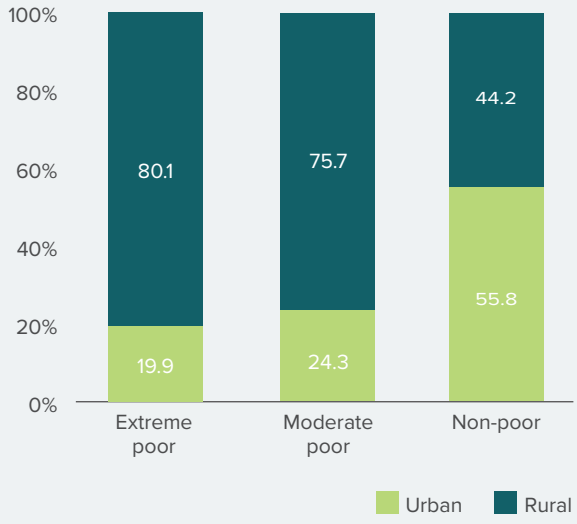
Evidence tends to confirm that the poorest people are located in the most unfavourable lands, characterized by higher rates of land degradation with relatively low proportion of improvements in land. Estimates carried out in the context of this briefing note (using a sample of 868 subnational regions in over 50 low- and middle-income economies across Africa, Asia, Latin America and Europe)[iv] report that the top 20% of subnational regions, i.e., the regions with the highest proportion of degraded land, also exhibit the highest average rate of extreme rural poverty (27%). This fraction shows a significant difference with respect to the other quintiles of the sample, which have an average poverty rate of 16%. When looking at the rates of extreme rural poverty according to the proportion of improved land, figures show that subnational regions with the lowest average proportion of improved land also have the highest shares of extreme rural poverty (25%), while the rest of the sample exhibits extreme rural poverty rates of about 18%.

Land degradation contributes significantly to increases in poverty. Results from an exploratory regression analysis, where extreme rural poverty rates are regressed against the proportion of degraded land[v] and income with the sample of 868 subnational regions, shows that a 5% rise in the proportion of degraded land increases the fraction of the population living in extreme rural poverty by about 1%. While this relationship may not appear to be too strong, in regions where the proportion of degraded land is high, this could have a significant effect on moving populations under the extreme rural poverty line. When applying this to the average proportion of degraded land for the quintile with the highest land degradation rates in the sample (48%), it reveals that land degradation could have increased extreme rural poverty rates by almost 10% between 2001 and 2015, while other things held constant. It must be noted that these are preliminary trends based on simplified regression analyses.

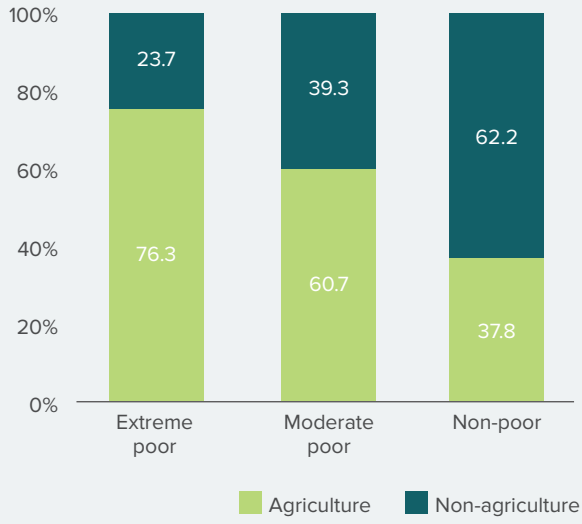
Land improvements[v] contribute significantly to poverty alleviation. Land restoration and rehabilitation can generate multiple benefits, such as supporting agricultural livelihoods, increasing labour, livestock and land productivity, creating jobs and access to markets and stabilizing land tenure and food prices [1]. The preliminary regression analysis, analyzing extreme rural poverty rates against income and the proportion of improved land, confirms that land improvements decrease poverty.

Figure 3 **Global trends on poverty**

a. Share of the population living in urban and rural areas



b. Share of rural workers by employment sector



Source: Castañeda, *et al.* 2018.

Evidence linking land degradation and inequality

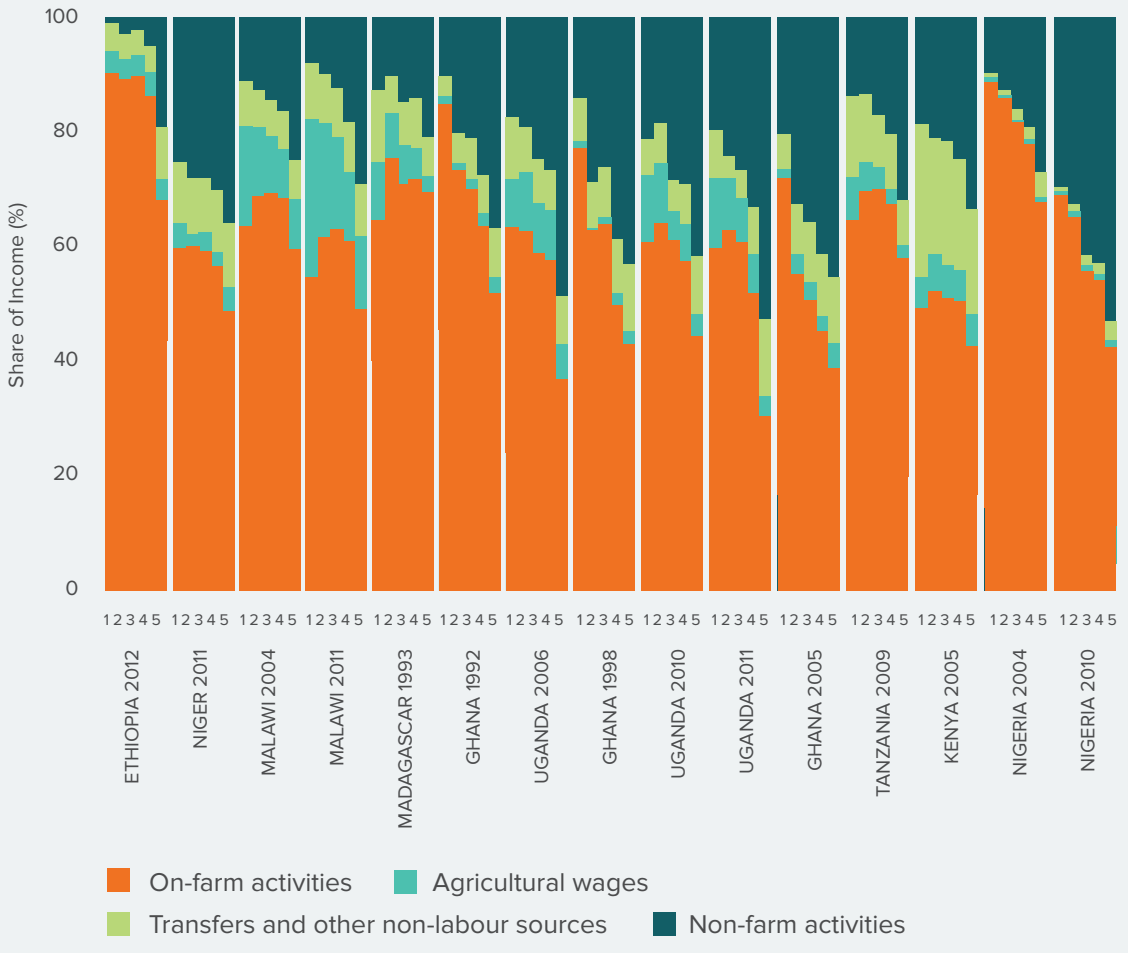
Land degradation has an asymmetric impact across society, increasing the gap among income groups. This is because land degradation disproportionately affects rural households that directly depend on land for their livelihoods and on poor households that obtain a larger share of their income from nature [2,9–11]. As illustrated in Figure 3b, there is a significant poverty gap between poor people engaged in agricultural and non-agricultural activities. The largest share of poor people are employed in land-based activities where the impacts of land degradation may affect them more immediately.

Furthermore, evidence shows that for a considerable number of countries (largely from Africa) land-based activities are not only the main source of income for the country but are also the main source of income for those households in the poorest quintile of expenditure (see Figure 4) [10]. As land degrades, declines in land productivity could increase the income gap between rural households dependent on land-based resources and those who rely on other types of assets to generate income (e.g., human capital, financial capital, produced capital, etc.), thereby exacerbating social inequalities within and across countries.

In several countries, people in the bottom 40% of the national income distribution (the indicator related to SDG Target 10.1 on reducing inequality) tend to be located in areas with a higher percentage of degraded land. Results from the analysis of the correlations between the distribution of the population in the bottom 40% and the distribution of degraded land across subnational regions indicate that there is a moderate correlation (r=0.5) between these two indicators. For several African countries, this correlation was higher than 0.7.

This situation could have a considerable effect on the income growth of those in the bottom 40% of the income group, as the state of the land, whether it is improving or degrading, can impact welfare as well as the effect of the country's economic growth to alleviate poverty [12].

Figure 4 **Share of total income from main income-generating activities (in Africa), by expenditure quintile [10]**



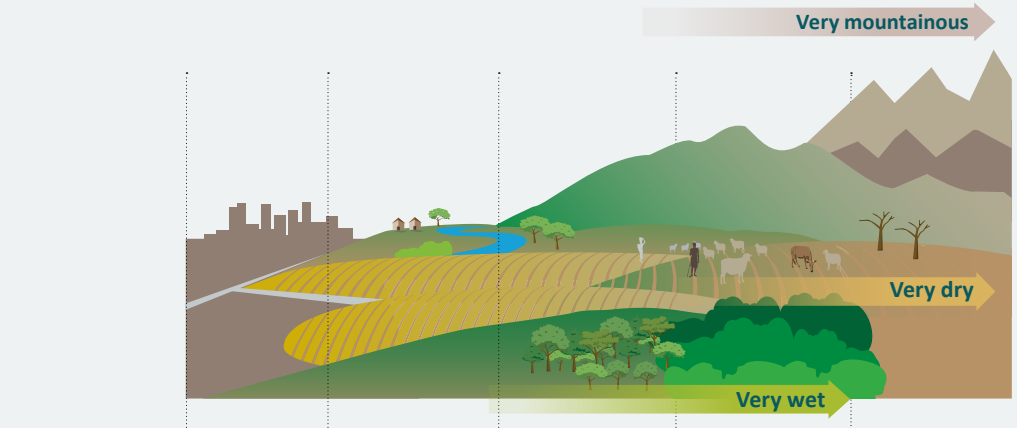
Note: Expenditure quintiles move from poorer to richer. Countries are sorted by increasing GDP in a specific year.
Source: Davis, *et al.* 2017.

GLOBAL AND REGIONAL TRENDS IN POPULATIONS LIVING ON DEGRADED LAND

The challenges that the rural poor face and their strategies to move out of poverty are conditioned by the landscapes in which they live, including types of agroecological systems, the productivity of natural resources, linkages to urban centers and population density [11] (see Figure 5). The continued expansion and intensification of land degradation increasingly affects populations living across different landscapes. Evidence shows significant correlations between the extent of land degradation and the proportion of populations on degraded land.[vi] Statistical analysis further confirms that the proportion of the rural population on degraded land contributes significantly to explaining rural poverty rates. This section presents an overview of global and regional trends in populations living on degraded land across different landscapes, developed in the context of this briefing note.

Estimates undertaken within the scope of this briefing note show that with the expansion of land degradation during the period 2001-2015, about three billion people across the world were residing on degraded land by 2015, of which one-third — equivalent to one billion people — lived in rural areas where the effects of land degradation on the population are more severe. In addition, out of 2.1 billion people worldwide living in rural drylands, 444 million (or 21%) resided in degraded areas (see Figure 6). Populations in drylands are especially affected by land degradation due to multiple factors, including low land productivity, high levels of water shortages, high population density in relation to the availability of productive land and high poverty rates [13].

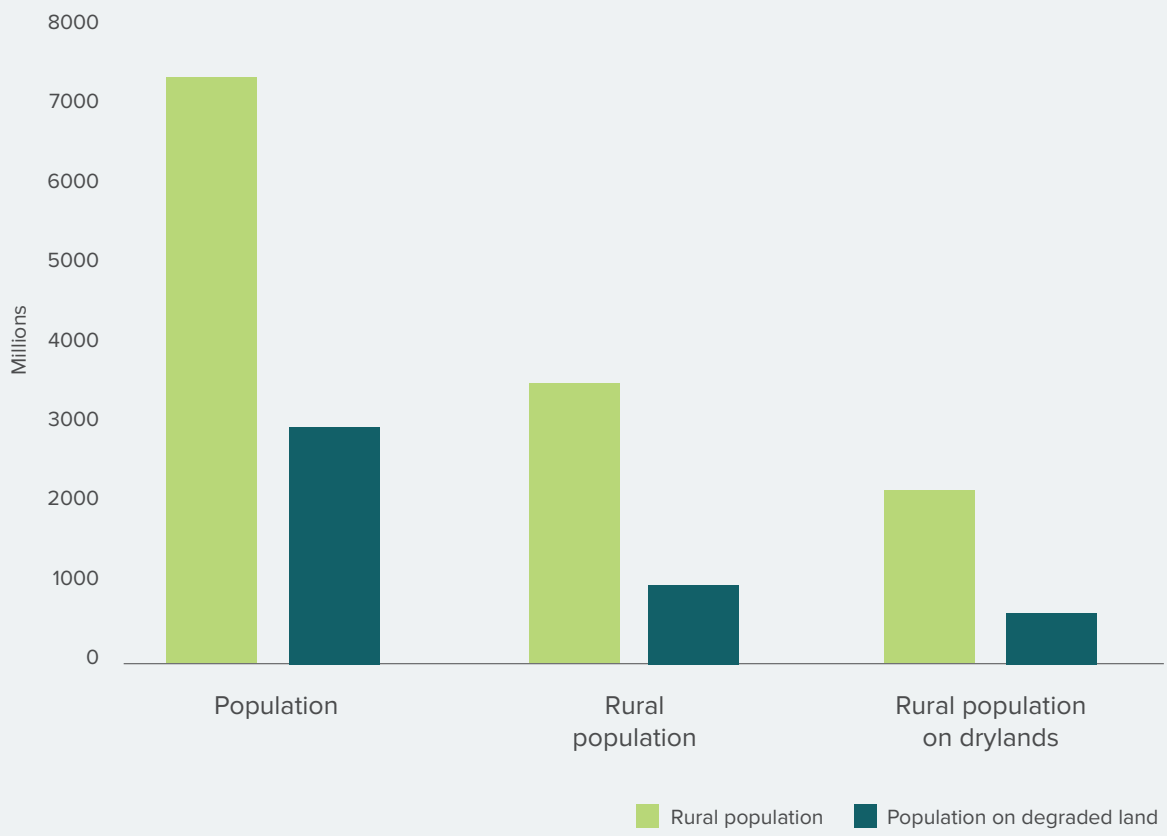
Figure 5 **Types of agro-ecological systems and levels of urbanization [11]**



	URBAN	HIGHLY PRODUCTIVE	HIGH POPULATION PRESSURE, CONSTRAINED AREAS	REMOTE	SPARSE
Agro-ecological system	Urban, peri-urban	Lowland irrigated areas, humid lowlands, coastal	Highland areas, drylands, semi-arid, forest margins, large islands	High mountains, pastoral, arid, rainforest jungle, small islands	Very high mountains, desert
Urban-rural continuum: population density and urbanization	Urban areas	Favoured areas	Less-favoured areas	Marginal areas	

Source: De La O Campos, *et al.* 2018

Figure 6 **Global population living on degraded land**

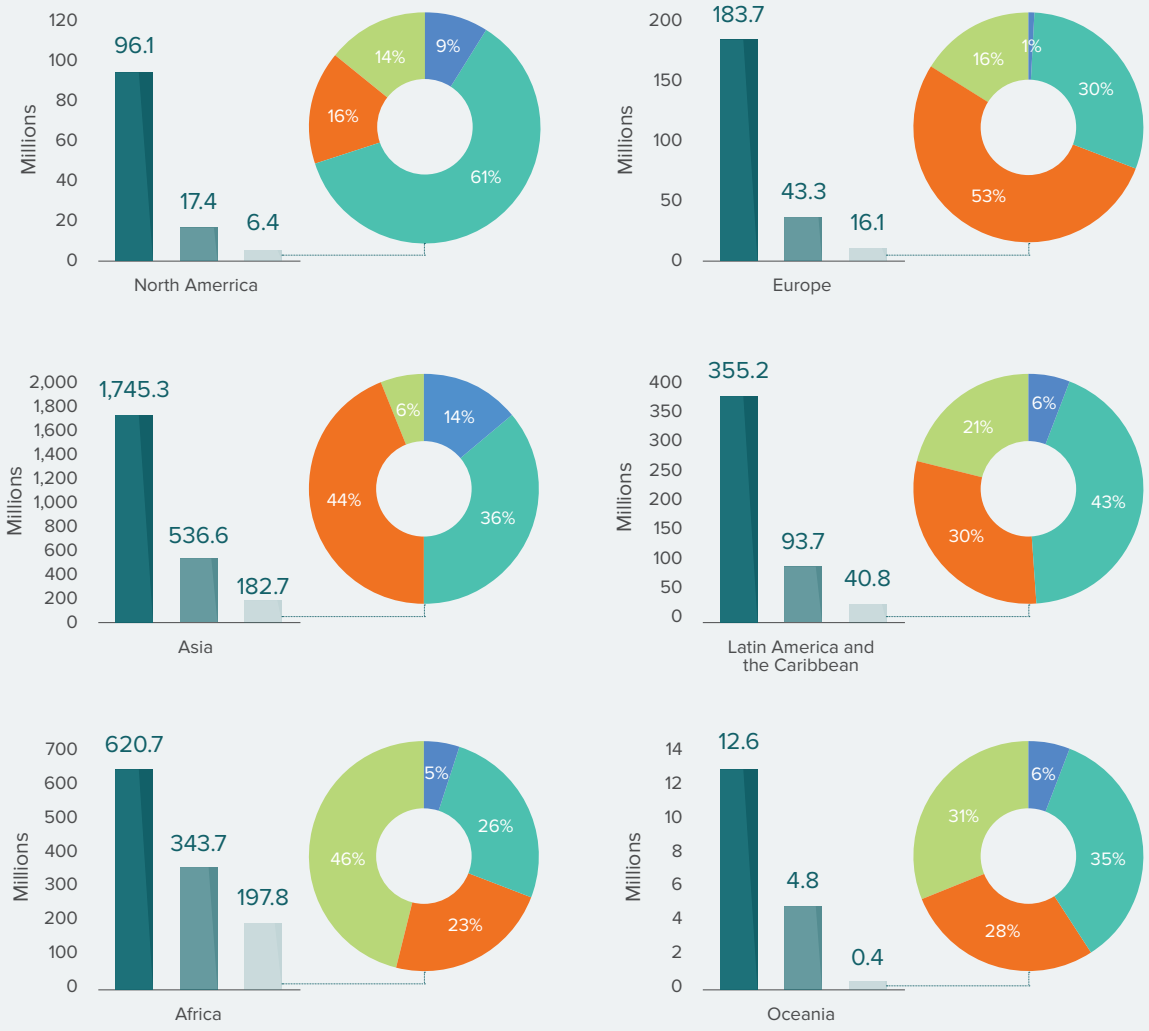


Source: Own estimates

Populations living on degraded land vary considerably by region. Figure 7 shows that in Asia, for instance, 1.7 billion people live on degraded land, of which 536 million (31%) reside in rural areas. In Africa, the expansion of land degradation affected more than half of the continent's total population, equivalent to 621 million people, 55% of whom (343 million) live in rural areas. Latin America hosts a total of 355 million people living on degraded land, with an estimated 93.7 million (26%) residing in rural degraded areas. In the case of Europe, North America and Oceania, 184 million, 96 million and 13 million people, respectively, reside on degraded lands (see Figure 7 for further details).

Looking at the global distribution of the total rural population living on degraded drylands (444 million people), the largest proportion of this population lives in Africa (45%). This is followed by Asia (41%), Latin America (9%), Europe (4%), and North America and Oceania (1%). Africa not only hosts the world's largest population on degraded rural drylands, but also more than half (61%) of the rural population on degraded land in Africa reside on degraded rural drylands — particularly on rural hyper-arid drylands (46%) and semi-arid drylands (26%). See Figure 7 for further details for Africa and other regions.

Figure 7 **Population living on degraded land by region (year 2015)**



Bar graph legend

- Total population on degraded land
- Rural population on degraded land
- Rural population on degraded drylands

Pie chart legend

- Share of population on arid drylands (%)
- Share of population on semi-arid drylands (%)
- Share of population on dry-humid drylands (%)
- Share of population on hyper-arid drylands (%)

Source: Own estimates based on spatially-explicit maps of land degradation [5], population [18], rural areas [19], and drylands [20] at global and regional levels.

RECOMMENDATIONS

Evidence shows that places with the highest proportion of degraded land have the most adverse socioeconomic performance, both in terms of high poverty rates and high levels of income inequality. Land degradation threatens the livelihoods of billions of people around the world, and bold actions are required to counteract these trends.

I. INVEST IN LAND DEGRADATION NEUTRALITY

Investing in LDN acts as an accelerator to achieve SDG 1 (no poverty) and SDG 10 (reduced inequalities), particularly in rural areas where 80% of the poor live. Land improvements support rural populations to generate income, contributing to the prosperity and equality of those at the bottom of the income distribution ladder through mechanisms such as sustaining the income of households largely dependent on land for their subsistence, increasing labour, livestock and land productivity and enabling resources for economic growth in the agricultural sector.

II. DEVELOP TRANSFORMATIVE PROJECTS AND PROGRAMMES

Directing investments associated with the achievement of LDN towards regions characterized by both high land restoration potential and poor socioeconomic conditions offers opportunities for multiple returns in terms of alleviating poverty and reducing inequality. Different approaches for restoration will have different implications on ecosystem functioning and livelihoods [1]. Countries are encouraged to design LDN transformative projects and programmes with a strong component on improving the livelihoods of the rural populations most in need. This will improve the living conditions of the most vulnerable people and increase the resilience of the ecosystems on which the rural poor rely for their subsistence, bringing prosperity to these regions.

III. TAKE ADVANTAGE OF THE SYNERGIES RESULTING FROM NATIONAL AND INTERNATIONAL DEVELOPMENT AGENDAS

Ambitious international processes linked to ecosystem restoration and sustainable land use are in place, as reflected in various development agendas, declarations and country commitments, including LDN targets and measures; Nationally Determined Contributions; the Bonn Challenge; the UN Decade on Ecosystem Restoration and the New York Declaration on Forests. Mainstreaming international agendas can support countries to foster policies and mobilize financial resources to avoid, reduce and restore degraded land.

IV. INCREASE PUBLIC DOMESTIC EXPENDITURE IN ACTIVITIES ORIENTED TOWARDS THE PROTECTION OF TERRESTRIAL ECOSYSTEMS

The allocation of fiscal resources for environmental protection are often linked to powerful arguments linked to a country's economic development [14]. This briefing note makes the case that increasing domestic public expenditure on protecting terrestrial ecosystems matters for tackling the most pressing social and economic challenges facing countries today, by contributing to the creation of jobs, alleviating poverty and reducing inequality.

ENDNOTES

[i] The UNCCD defines Land Degradation Neutrality (LDN) as "a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems."

[ii] Linkages can also be explored in the reverse direction, which is how poverty, income and wealth can induce land degradation under certain circumstances.

[iii] Extreme and mo derate poverty refer to individuals living below the international poverty lines of $1.90 and $3.10 per person per day in 2011 Purchasing Power Parity. The moderate poor are defined as individuals whose household per capita consumption (or income) lies between $1.90 and $3.10 per person per day [2]. Subnational regions refer to the first-level administrative subdivisions of the countries under analysis. In several countries, for example, the first-level administrative division is referred to as states or provinces.

[iv] Data on poverty rates and income for the subnational regions are obtained from the World Bank database on Poverty and Inequality [15]. The sample of 868 subnational regions is sometimes reduced due to missing values for some specific indicators. Therefore, the number of regions considered in the analysis decreases in some cases.

[v] In this briefing note, the measurements of land degradation and land improvement are aligned with the methodologies adopted by the United Nations Statistical Commission (UNSC) to monitor progress towards achieving SDG Target 15.3. Specifically, in the Good Practice Guidance for SDG Indicator 15.3.1 (Proportion of land that is degraded over total land area), changes in the state of land are assessed by analyzing trends in three subindicators: land productivity, land cover and soil organic carbon [16-17]. The integration of these subindicators is carried-out following the approach "one-out all-out" which state that if any of the subindicators shows a significant negative trend, then the area under analysis is degraded. On the other hand, if at least one subindicator shows a positive trend and none shows a negative trend, then the area is considered under improvement [17]. For further details see references [16-17]. Data on land degradation and land improvement used in this briefing note was obtained from Trends.Earth (a freely available QGIS plugin that facilitates the calculation of SDG 15.3.1 and its subindicators) for the period 2001-2015 using default global datasets and parameters[5].

[vi] The correlation coefficient of 0.67 was found between the proportion of degraded land and the proportion of the population living on degraded land using a sample of more than 800 subnational regions.

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